# GUN TURRET ASSEMBLY

## *Description*

### BACKGROUND OF THE INVENTION

This invention relates to a weapons assembly and is of the type which has a gun turret, a weapon supported in the turret, a turret cage and a loading device for transporting ammunition to the weapon in the turret.

For storing ammunition in a magazine in an armored vehicle, it is known, for example, from German Offenlegungsschrift (application published without examination) No. 34 37 588 to store ammunition in a region of the turret and to load ammunition into the weapon by a loading device. It is a disadvantage that the stored ammunition is loaded manually into the weapon, so that substantial space must be provided to allow the loader to feed ammunition to the turret weapon.

The above disadvantages may also be found in armored vehicles in which the ammunition magazine is arranged laterally of the weapon, as disclosed, for example, in German Patent No. 2,501,426.

Further, as disclosed in German Patent No. 1,301,742, when the ammunition is disposed partially in the lower region of the turret, there is the disadvantage that the turret cage must have a substantial volume because the ammunition is swung by a loading device from a lower receiving position to a location behind the breech ring of the weapon.

It is an object of the invention to provide greater facility in the use and protective capacity of gun turrets. Another object is to provide an improved weapons assembly in the turret where more ammunition may be magazined than in conventional weapons turrets of comparable dimensions without, however, adversely affecting the firing speed of the weapons assembly.

## SUMMARY OF THE INVENTION

In accomplishing the foregoing and related objects the invention provides a weapons assembly for a turret disposed above a turret cage; a plurality of weapons supported in the turret, each weapon having a barrel; and a plurality of belt magazines received in part in the turret and in part in the turret cage.

Each belt magazine has a loading belt and a plurality of horizontally disposed, ammunition-accommodating container tubes attached to the loading belt. The belt magazine further has a receiving position above the turret cage for loading into an associated weapon.

A gun turret structured according to the invention not only permits the firing of a

relatively large number of shots while the dimensions of the turret cage are maintained relatively small, but, because of simple motion sequence, a relatively high firing frequency may be achieved.

An assembly of the invention includes (a) a turret;(b) a turret cage disposed underneath the turret; and (c) a plurality of weapon supported in the turret, each having a barrel defining a barrel axis.

In accordance with one aspect of the assembly, the turret is rotatable beyond 90 degrees, up to 360 degrees.

In accordance with another aspect of the assembly the turret can be raised and lowered, and the turret can be moved transversely, either from front to back of the turret cage, or side to side.

The assembly can include a belt magazine received in part in the turret and in part in the turret cage; with the belt magazine having a loading belt and a plurality of horizontally disposed, ammunition-accommodating container tubes.

A device can load ammunition from the belt, and the turret can be elevatable from a flush position with the turret cage to a position above the turret cage.

The turret can be mounted on a vehicle, which can be armored.

In a method of the invention for providing a multipurpose assembly, the steps include providing a turret; disposing a turret cage underneath the turret; and supporting a plurality of weapons in the turret, each weapon having a barrel defining a barrel axis.

The method can further include the step of rotating the turret beyond 80 degrees, up to 360 degrees.

The method can also include the step of raising the turret, lowering the turret, moving it from side-to-side and front-to-back of a turret cage.

The method can further include the step of receiving a belt magazine in part in the turret and in part in the turret cage, with the belt magazine having a loading belt and a plurality of horizontally disposed, ammunition-accommodating container tubes attached to the loading belt.

The method also includes loading ammunition from the belt.

In a method of the invention for manufacturing a multipurpose assembly, the steps include providing a turret with multiple weapons disposed above a turret cage.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic, partially in section, side elevational view of a weapons assembly according to the invention.

FIG. 2 is a partial perspective view showing elevation of the weapons assembly of FIG. 1.

FIG. 3 is a perspective view of an alternative structure of FIGS. 1 and 2 for rotation of the weapons assembly.

FIG. 4 is a perspective view similar to FIG. 3, illustrating a further embodiment of the invention.

## DETAILED DESCRIPTION

With reference to the drawings FIG. 1 shows an assemblage 10 including a gun turret 11 having a plurality of weapons 12, with only weapons 12-1, 12-2 and 12-3 visible in FIG. 1. Each weapon 12 has a barrel 12b and is fed by a magazine 12m from a storage container 13 within a turret cage 14 upon which the turret 11 is positioned.

Also mounted in the turret cage 14 is a telescopically expandable column 15, by which the turret 11 can be raided and lowered as shown in Fig. 2.

The firing of the weapons 12, which in FIGS. 1 and 2 are machine guns 12-1, 12-2 and 12-3 for firing bullets from cartridges 12c on the magazine 12m, is controlled electronically by signals S1, S2 and S3 from a control box 16, which also controls the raising and lowering of the column 15 by signals S4.

While the weapons shown in the FIGS are machine guns, it will be appreciated that other weapons may be used in the turret 11. In addition the turret cage 14 may be part of a vehicle, which can be armored in conventional fashion.

As shown in FIG.2, the turret 11 may be raised above the turret cage 14. A signal S4 sent from the controller 16 causes the column segment 15-1 to rise and pull the associated segments 15-2 and 15-3 upwardly. The extent to which the rise of the segments 15-1 thru 15-3 takes place, is determined by the controller 16.

In order to provide the turret 11 with greater flexibility, it can be rotated up to 360 degrees. To accomplish the rotation, the base of the turret 11 is provided with a toothed ring 17 that is engaged by a gear 18, which is rotatable under the operation of the controller 16 by the sending of a control signal S5. When the gear 18 is rotated in a clockwise direction, the turret turns to the right, symbolized by the arrow R. Conversely, when the gear 18 is rotated in a counterclockwise direction, the turret 11 turns to the left, symbolized by the arrow L.

For additional flexibility, as shown in FIG. 4, the turret cage 14 can have channels to permit the turret 11 to be moved transversely. In FIG. 4 the channel 14C1 permits the column 15 to move in the direction indicated by the arrow C1. Similarly, the channel 14C2 permits the column 15 to move in the direction indicated by the arrow C2.

Movement of the column 15 illustratively is achieved by an assemblage 19, under the control of a signal S6 from the controller 16, by having the column 15 mounted on a moveable base 19b. A rotatable track 19c, moving clockwise, advances the column 15 in the direction F into the channel 14C2. Counterclockwise rotation of the track 19c moves the column 15 in the backward direction B so that the column 15 can enter the opposite

channel 14C1.It will be appreciated that the transverse movement of the column 15 can be accomplished in a wide variety of other ways.

It will be understood that the above description of the present invention is susceptible to various other modifications, changes and adaptations, and the same are intended to be comprehended within the meaning and range of equivalents of the appended claims.